Biospheric Sciences Branch Highlights
November-December 2001

** Three one-day workshops held by the Landsat Project Science Office over the period November 13-15, 2001.

The first workshop was a technical interchange meeting with the MIT/Lincoln Laboratory engineers that tested, characterized and calibrated the EO-1 Advanced Land Imager (ALI) both before launch and on - orbit. Discussed were noise, stability, spectral characterization, spatial characterization and radiometric performance including the performance of the on-board calibration. Most of the information on ALI had been presented elsewhere, though in less detail. This meeting was particularly useful in that it provided an interactive discussion between the ALI group and several groups at NASA that have had experience with other earth remote sensing instruments including MODIS and other Terra instruments, Landsat, and airborne sensors.

The second workshop was a Landsat-7 ETM+ Calibration Working Group meeting. This ad-hoc working group consists of the Landsat Project Science Office (LPSO) calibration personnel, the four Landsat vicarious calibration co-investigators recently selected under the Carbon Cycle NRA calibration investigation organized by the LPSO, and the USGS/Landsat-7 Image Assessment System representatives. Additionally, the MIT/Lincoln Labs engineers and EOS Calibration Scientist attended. New vicarious calibration results presented at the meeting continued to show that: (1) the thermal band calibration was not showing any trends and was accurate on the order of 1% and (2) the reflective bands were stable in their response at the ability of the vicarious calibrations to detect changes. The consistency between the current advertised ETM+ calibration and the vicarious measurements continues to be 5% or better. On board calibration results showed that previously identified trends continued. The response
to the diffuser panel on ETM+ continues to change at rates up to 1.5 % per year. The vicarious results continue to suggest that these changes are not in the instrument proper. The results indicate that the Landsat-7 ETM+ is the stablest and best calibrated of the Landsat series. The stability to date of the ETM+ appears unmatched in the current suite of optical land observing satellite sensors.

The third workshop was a Landsat Thematic Mapper Calibration Working Group (LTMCALWG) headed by Phil Teillet from the Canadian Center for Remote Sensing (CCRS). This group's goal is to reconstruct the radiometric calibration history for the Landsat-5 Thematic Mapper and provide methodologies to the various ground processing system operators to implement this revised calibration as well as to adjust previously processed data to this improved scale. This group expects to make recommendations this spring on: (1) a time dependent calibration equation for each of the

reflective bands (the VNIR band equations are ready, there is still some tweaking being done to the SWIR bands due to icing effects on the cold focal plane) and (2) the adequacy of the historically provided thermal band calibration and any bias adjustments that may need to be made.

** Terra Deep Space Calibration briefing

A Terra Deep Space Calibration briefing for Deputy Center Director, Bill Townsend was held on November 29. Jon Ranson provided a summary of the Terra science issues and engineering evaluations of the proposed pitch over maneuver that will enable Terra Instruments to view deep space or the lunar surface. Attendees included Vince Salomonson and Wayne Esaias (MODIS); Bruce Wielicki and Kory Priestly (CERES); Michael King, Earth Observing System (EOS) Sr. Project Scientist; Phil Sabelhaus, EOS Program Manager; Paul Westmeyer, EOS Project Lead Engineer; Paul Ondrus, Earth Science Mission Operations (ESMO) Manager; Eric Moyer and John Teter, Terra Flight Operations Team personnel; and Terra Deputy Project Scientist Si-Chee Tsay. Mr. Townsend indicated his approval of the plans for the maneuver and directed Ranson to send presentation materials to Mike Luther in Code Y at NASA Headquarters.